

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 1. (Previously Amended) An isolation system with analog communication across an
2 isolation barrier comprising:

3 an isolation barrier circuit having at least one isolation element;
4 a digital to analog circuit configured to provide a constant average
5 analog output signal to the isolation barrier and having an input for receiving an input
6 digital signal to be communicated across the isolation barrier; and

7 an analog to digital circuit having an input coupled to the analog
8 output of the isolation barrier circuit for providing a digital output signal.

1 2. (Previously Amended) The isolation system of claim 1 in which said digital to
2 analog circuit includes an encoder circuit responsive to said input digital signal to provide a
3 digital signal, and a digital to analog converter responsive to said digital signal to provide to
4 said isolation barrier said constant average analog output signal.

1 3. (Previously Amended) The isolation system of claim 1 in which said digital to
2 analog circuit includes a digital to analog converter with an input for receiving said input
3 digital signal and a modulation circuit responsive to said digital to analog converter for
4 providing said constant average analog output signal.

1 4. (Original) The isolation system of claim 1 in which said analog to digital circuit
2 includes an analog to digital converter responsive to said input analog signal from said
3 isolation barrier to provide a digital signal, and a decoder circuit responsive to said digital
4 signal to provide said digital output response.

1 5. (Original) The isolation system of claim 1 in which said analog to digital circuit
2 includes a demodulator circuit responsive to said input analog signal from said isolation
3 barrier, and an analog to digital converter responsive to said analog signal to provide said
4 digital output signal.

1 6. (Original) The isolation system of claim 1 in which said analog to digital circuit
2 includes an analog to digital converter.

1 7. (Original) The isolation system of claim 1 in which said digital to analog circuit
2 includes a digital to analog converter.

1 8. (Original) The isolation system of claim 1 in which said digital to analog circuit
2 includes a termination resistance connected with said isolation barrier.

1 9. (Original) The isolation system of claim 1 in which said analog to digital circuit
2 includes a termination resistance connected with said isolation barrier.

1 10. (Original) The isolation system of claim 1 in which said isolation element
2 includes a capacitance.

1 11. (Original) The isolation system of claim 1 in which said isolation element
2 includes a transformer.

1 12. (Original) The isolation system of claim 1 in which said analog to digital circuit
2 includes a common mode interference signal sensing circuit and a summing circuit for
3 removing the common mode interference signal from the received analog signal from the
4 isolation barrier.

1 13. (Original) The isolation system of claim 1 in which said digital signal to be
2 communicated across said isolation barrier includes data.

1 14. (Original) The isolation system of claim 1 in which said digital signal to be
2 communicated across said isolation barrier includes control information.

1 15. (Original) The isolation system of claim 14 in which said digital signal to be
2 communicated across said isolation barrier includes reference and calibration information.

1 16. (Original) The isolation system of claim 1 in which said digital signal to be
2 communicated across said isolation barrier includes data and control information.

1 17. (Cancelled)

1 18. (Cancelled)

1 19. (Previously Amended) The isolation system of claim 4 in which the input
2 analog signal is a constant average signal.

1 20. (Previously Amended) The isolation system of claim 5 in which the input
2 analog signal is a constant average signal.

1 21. (Currently Amended) A bi-directional isolation system with analog
2 communication across an isolation barrier comprising:

3 an isolation barrier circuit having at least one isolation element;
4 a first digital to analog circuit having an configured to provide a
5 constant average analog output signal coupled to a first side of the isolation barrier and
6 having an input for receiving an input digital signal to be communicated across the
7 isolation barrier;

8 a first analog to digital circuit having an input coupled to the first
9 side of the isolation barrier circuit;

10 a second digital to analog circuit having an configured to provide a
11 constant average analog output signal coupled to a second side of the isolation barrier and
12 having an input for receiving an input digital signal to be communicated across the
13 isolation barrier; and

14 a second analog to digital circuit having an input coupled to the
15 second side of the isolation barrier circuit.

1 22. (Original) The bi-directional isolation system of claim 21 in which the input
2 digital signals are communicated simultaneously across the isolation barrier circuit.

1 23. (Original) The bi-directional isolation system of claim 21 in which the input
2 digital signals are communicated alternately across the isolation barrier circuit.

1 24. (Original) The bi-directional isolation system of claim 21 further including at
2 least one echo cancellation circuit for removing a local echo signal from the input of at
3 least one of said first and second analog to digital circuits.

1 25. (Previously Presented) The isolation system of claim 1 in which the analog to
2 digital circuit is configured to decode the constant average input analog signal.